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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/062,833	01/30/2002	Clinton S. Hartmann	RFSC-0006	4339

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HITT GAINES P.C.
P.O. BOX 832570
RICHARDSON, TX 75083

EXAMINER

PATHAK, SUDHANSHU C

ART UNIT	PAPER NUMBER
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2634

DATE MAILED: 04/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/062,833

Applicant(s)

HARTMANN, CLINTON S.

Examiner

Sudhanshu C. Pathak

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on January 30th, 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on January 30th, 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-to-20 are pending on the application.

Drawings

2. Figures 1-3 should be designated by a legend such as "Prior Art" because only which is known is illustrated.
 - Figure 1 discloses an illustration of a known Pulse-Position Modulation scheme (PPM).
 - Figure 2 discloses an illustration of increasing the data rate in a (PPM) scheme by reducing the overlapping spacing between the pulse positions. This technique is already known as disclosed in the Specification (Page 11, lines 17-20 & Page 12, lines 1-10).
 - Figure 3 discloses an illustration of increasing the data rate in a (PPM) scheme as disclosed in Figure 1.

Corrective Action is Required.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 1-10 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The subject matter claimed is a "propagated signal", a signal in itself is unpatentable, but a method and apparatus to generate the desired signal are patentable.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 4 & 14 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification does not disclose in such a way so as to understand what is meant that the "time slots" are not adjacent. The specification does not disclose non-adjacent "time slots".

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1, 11 & 2, 12 & 3, 13 & 6, 16 & 7, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art in view of Hirt (5,926,301).

Regarding to Claims 1 & 11, The Applicant Admitted Prior Art (AAPA) discloses a method of propagating a signal comprising a period of time spanned by a pulse, wherein said period of time divided into a group of time slots, each of said time slots

having a unique time position and causing said pulse to encode a data element by said time position (Fig. 1, elements 105-120 & Specification, Page 10, lines 1-22 & Page 11, lines 1-9). However, the AAPA does not disclose designating a period of time spanned by a pulse, and said period of time divided into time slots and each of the time slots having a unique phase and causing said pulse to encode a data element by said phase position.

Hirt discloses a method and apparatus for wireless communication comprising a transmitter and receiver wherein the pulse position modulation (PPM) encoded data is further frequency modulated with two subcarrier frequencies (Abstract, lines 1-7) so that the transmitted signal not only has a different time position but also a different frequencies (Abstract, lines 1-7 & Fig. 2 & Column 4, lines 23-55 & Column 5, lines 53-67 & Column 9, lines 45-67 & Column 10, lines 1-51 & Claims 1, 6, 7). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Hirt teaches implementing a hybrid modulation scheme such as PPM-FSK and this can be implemented in the method as described in the AAPA to increase the data throughput and minimize the impact of the interference on the transmitted data. Furthermore, FSK and PSK are related since a specified change in the frequency is analogous to a corresponding change in phase. A frequency is characterized as a number of cycles of a wave per unit of time, and further a cycle of the wave corresponds to 360 degrees in phase. Furthermore, it is obvious that it is possible to combine multiple modulation schemes in combination with pulse position

modulation scheme. Thus, AAPA in view of Hirt satisfies the limitations of the claims.

Regarding to Claims 2 & 12, The Applicant Admitted Prior Art (AAPA) in view of Hirt discloses a method and apparatus for transmitting a signal comprising a hybrid modulating scheme further comprising modulating the data using pulse position modulation (PPM) technique and then phase shift keying modulation (PSK) technique as described above. Hirt further discloses mapping the digital data using PPM modulation scheme and then PSK modulating the encoded data for transmission, the inverse of this is implemented in the receiver to ascertain the transmitted / received data (Column 4, lines 23-55 & Column 5, lines 1-67 & Tables 1-3 & Column 9, lines 45-67 & Column 10, lines 1-67 & Fig. 5-8 & 10). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that the AAPA in view of Hirt satisfies the limitations of the claim.

Regarding to Claims 3 & 13, The Applicant Admitted Prior Art (AAPA) in view of Hirt discloses a method and apparatus for transmitting a signal comprising a hybrid modulating scheme further comprising modulating the data using pulse position modulation (PPM) technique and then phase shift keying modulation (PSK) technique as described above. The AAPA further discloses the time slots in the group to be adjacent (Fig. 1 & Specification, Page 10, lines 1-15). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that the AAPA in view of Hirt satisfies the limitations of the claim.

Regarding to Claims 6 & 16, The Applicant Admitted Prior Art (AAPA) in view of Hirt discloses a method and apparatus for transmitting a signal comprising a hybrid modulating scheme further comprising modulating the data using pulse position modulation (PPM) technique and then phase shift keying modulation (PSK) technique as described above. The AAPA further discloses increasing the data density (rate) by moving the allowable pulse position closer together; this is done by varying the parameter "Tmin" (Fig. 1-2 & Specification, Page 11, lines 1-20), thus more than one pulse is located within the group of time slots. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that the AAPA in view of Hirt satisfies the limitations of the claim.

Regarding to Claims 7 & 17, The Applicant Admitted Prior Art (AAPA) in view of Hirt discloses a method and apparatus for transmitting a signal comprising a hybrid modulating scheme further comprising modulating the data using pulse position modulation (PPM) technique and then phase shift keying modulation (PSK) technique as described above. The AAPA further discloses increasing the data density (rate) by moving the allowable pulse position closer together; this is done by varying the parameter "Tmin" (Fig. 1-2 & Specification, Page 11, lines 1-20), thus more than one pulse is located within the group of time slots. However, AAPA does not disclose encoding data that is more than fifteen bits long.

Hirt discloses transmitting the number of bits depending on the number of slots defined in the system and this can further be increased by combining FSK/PSK modulation on the PPM encoded data, Hirt gives an example of 16 different slots

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and 4 different frequencies (Column 4, lines 28-67 & Column 5, lines 53-67 & Column 6, lines 1-6, 30-67 & Column 7, lines 1-35). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Hirt teaches computing the data bits that can be encoded depending on the no. of unique positions of the PPM pulse and further increased by implementing a PSK/FSK modulation, furthermore it is possible to encode at least 15 bits of information in the system as described in the AAPA and therefore there is no criticality in encoding at least 15 bits and it is merely a matter of design choice.

9. Claims 8, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art in view of Hirt (5,926,301) in further view of Burke et al. (4,677,656).

Regarding to Claims 8 & 18, The Applicant Admitted Prior Art (AAPA) in view of Hirt discloses a method and apparatus for transmitting a signal comprising a hybrid modulating scheme further comprising modulating the data using pulse position modulation (PPM) technique and then phase shift keying modulation (PSK) technique as described above. However, the AAPA in view of Hirt do not disclose the data transmitted to be a header, an error detection message, a synchronization, and / or data message.

Burke discloses a two-way radio communications system for transmitting data in packets between remote transceivers (Abstract, lines 1-14 & Fig. 1). Burke further discloses the data packet transmitted with a header (Column 14, lines 45-68 & Fig. 7-9); an error detection message (Column 13, lines 35-45 & Fig. 7, 9); a

synchronization element (Fig. 7 & Column 14, lines 1-8); and a data message (Fig. 7-9 & Column 14, lines 1-4, 45-48). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that the data protocol as described in Burke can be implemented and transmitted by the modulation scheme as described in the AAPA in view of Hirt, thus satisfying the limitations of the claims.

10. Claims 4, 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art in view of Hirt (5,926,301) in further view of Dunn (3,742,498).

Regarding to Claims 4 & 14, The Applicant Admitted Prior Art (AAPA) in view of Hirt discloses a method and apparatus for transmitting a signal comprising a hybrid modulating scheme further comprising modulating the data using pulse position modulation (PPM) technique and then phase shift keying modulation (PSK) technique as described above. However, AAPA in view of Hirt does not disclose the time slots in the group to be not adjacent.

Dunn discloses a time division multiple access (TDM) system so as to allow for multiple access and minimize interference between the users (Abstract, lines 1-10 & Column 1, lines 45-68). In the TDM system each user is provided with a specified time slot and thus a user does not possess two adjacent time slots so as to minimize interference (Column 1, lines 45-68). Furthermore, Dunn discloses implementing a TDM system employing pulse position modulation (Column 1, lines 61-68).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Dunn teaches implementing a TDM system and that the TDM

system may be implemented with a pulse position modulation technique so as to prevent each user to transmit on adjacent time slots, thus satisfying the limitations of the claim.

11. Claims 5, 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art in view of Hirt (5,926,301) in further view of Gitlin et al. (6,064,662).

Regarding to Claims 5 & 15, The Applicant Admitted Prior Art (AAPA) in view of Hirt discloses a method and apparatus for transmitting a signal comprising a hybrid modulating scheme further comprising modulating the data using pulse position modulation (PPM) technique and then phase shift keying modulation (PSK) technique as described above. However, AAPA in view of Hirt does not disclose time-slots having non-uniform spacing.

Gitlin discloses a system and method for optimizing usage of a communication transmission medium, wherein the transmission medium may be sliced into time and frequency domains so as to create time-frequency slices for assignment to users having varying access rates and user-application requirements (Abstract, lines 1-13). The time-frequency slices created further comprises non-uniform time slot spacing (Abstract, lines 1-20 & Column 2, lines 63-67 & Column 3, lines 1-17 & Fig. 5-10). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Gitlin teaches non-uniform spacing and implementing this with the modulation scheme as disclosed in AAPA in view of Hirt increases the data

rate of the system and provides the flexibility to the system so as to optimize the data rates to the users in the system.

12. Claims 9, 19, 10, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art in view of Hirt (5,926,301) in further view of Burke et al. (4,677,656) in further view of Gitlin et al (6,064,662).

Regarding to Claims 9-10, 19-20, The Applicant Admitted Prior Art (AAPA) in view of Hirt in further view of Burke discloses a method and apparatus for transmitting a signal comprising a hybrid modulating scheme further comprising modulating the data using pulse position modulation (PPM) technique and then phase shift keying modulation (PSK) technique wherein the data transmitted to be a header, an error detection message, a synchronization, and / or data message as described above. However, Applicant Admitted Prior Art (AAPA) in view of Hirt in further view of Burke does not disclose a plurality of groups and differing number of time slots.

Gitlin discloses a system and method for optimizing usage of a communication transmission medium, wherein the transmission medium may be sliced into time and frequency domains so as to create time-frequency slices for assignment to users having varying access rates and user-application requirements (Abstract, lines 1-13). The time-frequency slices created further comprises non-uniform time slot spacing (Abstract, lines 1-20 & Column 2, lines 63-67 & Column 3, lines 1-17 & Fig. 5-10). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Gitlin teaches implementing a plurality of time slots groups

and differing number of slots and implementing this with the modulation scheme as disclosed in AAPA in view of Hirt increases the data rate of the system and provides the flexibility to the system so as to optimize the data rates to the users in the system.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sudhanshu C. Pathak whose telephone number is (703) 305-0341. The examiner can normally be reached (Monday-Friday from 8:30 AM to 5:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin, can be reached at (703) 305-4714.

Any response to this action should be mailed to:

- Commissioner of Patents and Trademarks Washington, D.C. 20231

Or faxed to:

- (703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to:

- Crystal Part II, 2121 Crystal Drive, Arlington, VA, Sixth Floor
(Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to:

- Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.



STEPHEN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600